

**Social Sciences Coordinating Committee:
Best Practices for NCA: Suggestions from the Social Sciences**

The USGCRP Social Sciences Coordinating Committee reviewed the Third National Climate Assessment and developed this set of suggestions for Best Practices for the Sustained National Climate Assessment and future Quadrennial Reports.

Key Messages:

- **Why this is important:** Assessment users want simple, short, useful messages.
- **Suggestions:**
 - Address issues that speak to society's greatest interests and what society has at stake.
 - Use common set of language and structure across chapters
 - Possible structure: what is the climate change, what is the impact, and what is the response.
 - To the extent possible, include information on both risk and opportunity to avoid emotional numbing.
- **Examples of where this has been done well:**
 - NCA2014 [Report Findings, Our Changing Climate](#) Key Messages
 - AAAS [What We Know](#) 3 Key Messages
 - EPA [Climate Benefits Report](#) Key Findings
 - What's New box on p. 2 in [California's Third Climate Assessment](#)

Scenarios:

- **Why this is important:** Scenarios allow users to envision what the world could look like in the future. Scenarios can be a method for integrating human dimensions into models of the climate system.
- **Suggestions:**
 - Develop and use scenarios as a research tool that enables integration of human and natural systems.
 - Provide a range of scenarios that enable reader to explore a spectrum of alternative futures that represent societal choices.
 - Use a consistent set of scenarios across the report so users can compare and aggregate
 - Where appropriate, include additional sector/region scenarios.
 - Provide examples of how people use scenarios for decision-making.
- **Examples of where this has been done well:**
 - Portland State University Dynamic Ecosystems Lab: [Climate Science and Forest Management in Minnesota Project](#)

- Fish and Wildlife Service: [Scenario Planning To Address Uncertainty in Natural Resource Conservation](#)
- National Parks Service: [Using Scenarios to Explore Climate Change: A Handbook for Practitioners](#)
- [Natural Capital Project](#) -- [Scenarios Primer](#)

Risk and opportunity:

- **Why this is important:** There are a range of ways to think about risk and opportunity. We want to enable NCA users to think about this as holistically as possible.
- **Suggestions:**
 - Link biophysical climate changes to impacts on human and natural systems (e.g., damages to roads and homes from sea level rise; deaths caused by heat waves). Quantify impacts where possible.
 - Provide info on the range of risks and outcomes (including harmful and beneficial aspects), quantifying information where possible.
 - Discuss risks AND opportunities resulting from climate changes and society's responses.
 - Further suggestions may become available following the Spring '16(?) NRC workshop.
- **Examples of where this has been done well:**
 - [Making America more resilient toward natural disasters](#)
 - NPR: [For Better Treatment, Doctors And Patients Share The Decisions](#)
 - Climate Central's [Surging Seas](#) ; study on its use: [A method to evaluate the usability of interactive climate change impact decision aids](#)

Certainty:

- **Why this is important:** Acknowledging and bounding uncertainty increases audience engagement and trust.
- **Suggestions:**
 - Focus on what is known, while acknowledging uncertainty.
 - Provide best estimate and bounds: e.g., "Scientists' best estimate is 3 feet of sea level rise by 2100, but it could be as much as 6 feet or as little as 1 foot" ([Macinnis et al. 2014](#))
 - Focus on what will happen when climate impact happens, rather than the probability of an event happening in particular time frame.
 - At top of each chapter, include guide to how to read chapter (e.g., "This chapter includes Key Messages. For each Key Message, there is a Traceable Account, ...")
 - Use dual (verbal—numerical) scale to describe probabilities in key findings: e.g. "very likely (>90% chance)" versus "very likely" to increase accuracy of audience interpretation ([Budescu et al 2012](#))

- Traceable Accounts are presented more explicitly (compared to NCA3), and include more specific likelihood / confidence language.
 - Use consistent process to determine authors' level of certainty / likelihood / confidence.
 - Include explicit definitions of certainty-related language.
 - Include numeric boundaries (e.g., "66% to 90% rather than ">66%").
- **Examples of where this has been done well:**
 - UK climate projections use probability assessments (numeric, verbal, [Maps](#)) for range of variables. Graphs show how a variable is projected to change over time for regions, for a range of probabilities (e.g., [London temperature](#))
 - Effective communication of uncertainty in the IPCC reports [Budescu et al. 2012](#)
 - [WXShift](#), which shows local daily temp. relative to ave. and 2050 projections

Valuation:

- **Why this is important:** Climate changes have vast and varied effects on the U.S. economy and on goods and services that people value. Appendix 6 of the 3rd National Climate Assessment indicates valuation analyses are an important topic that could not be adequately covered by the 2014 assessment and that should be considered in future reports.
- **Suggestions:**
 - To the extent possible, provide economic valuation of the climate impacts, both aggregate and within each region or sector, using a set of consistent underlying scenarios. Where there are limits to scenario or modeling analysis, case studies of the economic impacts of climate change (e.g., from extreme events) can be useful to include.
 - The following questions may help you frame your valuation analysis:
 - What is the economic value of the impacts of climate change on the US economy, and within individual sectors and regions?
 - What are the costs of climate change on human health, economic activities (e.g., agricultural production), infrastructure, livelihood, and property assets?
 - What are the economic costs of climate change on the markets and how might this change affect consumers, resource allocations, and commodity prices?
 - What are the impacts and costs of climate change on non-market goods and services (e.g., ecosystems)?
 - What are the economic costs of climate change extremes (e.g., heat waves, hurricanes) on human health, economic activities, infrastructure, livelihoods, and property assets?
 - How would mitigation and adaptation policies and investments alter risks and the economic impacts of climate change?
 - How will insurance and financial market responses change climate change impacts (e.g., on agriculture, increasingly risk-prone property, recreational

- services, health, and human capital, among other sectors)?
- In addition to these key questions, other analytical topics important for authors to consider include:
 - How will climate change impacts on one sector have cascading economic impacts that affect other sectors?
 - How does the economic analysis being considered address and communicate uncertainty?
 - How can risk preferences influence valuation of impacts for which there is some estimated probability?
 - Consider how to include the use of discounting in the assessment. Time preference is critical to the final value calculated in impact calculations. Consider the use of multiple discount rates to report a range of values (e.g., see discount rates used to derive the U.S. government [Social Cost of Carbon](#)).
 - How do you value impacts that most affect vulnerable populations in the U.S. when monetary value of impacts may be lower, but equity value may be high?
 - Consider qualitative evidence, for example from interviews and participation in stakeholder-led activities, as a complement to quantitative evidence. Qualitative evidence can be particularly useful in understanding the ways in which communities approach their assessment of and responses to the challenges of climate change.
 - **Examples of where this has been done well:**
 - [American Climate Prospectus: Economic Risks in the US](#) from the Risky Business Project
 - [Climate Change Impacts and Risk Analysis Project](#) from EPA
 - [Economics of Adaptation to Climate Change](#) from The World Bank.

Choices and behavior:

- **Why this is important:** People make choices that shape risks and opportunities. We want to impart on readers a sense of agency and efficacy. Moreover, one of the goals of the NCA is to provide support for decision and choice making.
- **Suggestions:**
 - Provide info on how behavior + choices shape risks and opportunities.
 - Multiple aspects may be relevant but not all need to be discussed:
 - Attitudes, beliefs, and understanding: e.g.,
 - risk preferences
 - mental models (conceptual understanding of the world, for example how the climate system works) (e.g. [Stermann: Mental Models and Mass Balance](#); Leiserowitz et al. 2010: [Americans' Knowledge of Climate Change](#))
 - values and beliefs (see reviews in [Mind, Society, and Behavior: World Bank 2015](#); [Persson et al. 2015](#))

- attitudes towards adaptation and mitigation response options.
 - Adoption of new technologies and ideas
 - Individual and market drivers, including resource demands, preferences and culture
 - Effects of prices and incentives on behavior (e.g. solar rebates)
 - Political and governance systems
 - Effects on behavior of social context (e.g., parents' behaviors, community norms, workplace adaptation or mitigation practices)
- **Examples of where this has been done well:**
 - [Climate change and moral judgement](#) (Markowitz and Shariff 2012)
 - Carbon Mitigation Initiative: [Stabilization Wedges](#)
 - NCA2014 FAQ [“Are there ways to reduce climate change?”](#)

Responses:

- **Why this is important:** NCA readers often ask: “What can I do?” The Assessment will demonstrate how individuals and communities are responding in diverse ways, and help readers identify responses that they can engage in. We want to elicit positive emotions and a sense of efficacy in our audience.
- **Suggestions:**
 - Provide information on responses that are currently taking place and their effectiveness.
 - Demonstrate benefits of responses that integrate adaptation and mitigation.
 - Emphasize co-benefits with respect to values and priorities like health, economic opportunity, and community cohesion.
 - Focus on actions that are immediate, local, plausible, and under individual and community control. Participatory processes can build local knowledge base and empower individuals and communities to support these actions.
 - Identify “No regrets” strategies that are lower cost, have lower probability of failure, and have significant co-benefits.
 - Highlight metrics of effectiveness that currently exist or are needed (especially outcomes focused).
- **Examples of where this has been done well:**
 - [Great Lakes Cities Climate Case Studies and Fact Sheets](#) -- e.g. [Adaptive Capacity in Dayton, OH](#)
 - [City of Punta Gorda Adaptation Plan](#)
 - [A participatory systems approach to understanding climate adaptation needs](#)

Case studies:

- **Why this is important:** Case studies help readers translate abstract concepts into reality. Case studies show where the rubber meets the road.
- **Suggestions:**
 - Highlight case studies that pair impacts and responses. Kinds of case studies:
 - Processes: Concrete actions individuals and communities are taking

- Tools: People using real-life tools to aid their decisions. Include live links where possible.
- Present consistent information in case studies: place, population size, sectors addressed.
- Include variety of case studies (e.g., economic and non-economic values, cities, towns, companies).
- Case studies should be written by people who represent the community being discussed. Include byline for author.
- **Examples of where this has been done well:**
 - Georgetown Climate Center: [Case studies in building community resilience](#)
 - [Special issue of Michigan Journal of Sustainability](#) with adaptation case studies
 - Case studies in the [Nebraska climate assessment](#)
 - [Case studies supplement](#) to Pacific Islands Regional Climate Assessment